VILLAGE OF WILMETTE NEIGHBORHOOD STORAGE PROJECT

The Largest Capital Project in the History of the Village

SPEAKERS

Brigitte Berger-Raish, PE
Director of Engineering and Public Works, Village of Wilmette

Darren Olson, PE, CFM, D.WRE
Vice President, Assistant Department Head, Water Resources,
Christopher B. Burke Engineering, Ltd.

TIMELINE

2013

APRIL 2013
Historic Rain Event Results in hundreds of flooding complaints on the West side of the Village

2014

MARCH 2014
First of Dozens of Public Meetings on the Stormwater Action Plan

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

DECEMBER 2013
Start of Stormwater Action Plan for the West side of Wilmette

APRIL 2020
Phase 1 begins at Community Playfield

OCTOBER 2020
Community Playfield Construction Complete

2015

JANUARY 2015
Village of Wilmette Stormwater Management Plan for West Side Completed with 3 Alternative Projects Developed

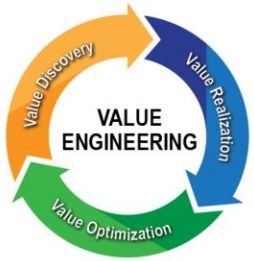
MARCH 2020
School District and Park District Intergovernmental Agreements Approved

Covid-19 Pandemic Begins

COVID-19
Coronavirus

FEBRUARY 2021
Phase 2 construction begins

2016-2017



2016 – 2017
Value Engineering Study completed to determine best Alternative to move forward

DECEMBER 2019
Phase 1A Construction Begins

2018

APRIL 17, 2018
Village Board Decides on Neighborhood Storage Project as Preferred Alternative

2019

JUNE 2019
Start of Multiple Public Meetings with Park District and Public related to Park Construction and Amenities for Phases 1-3 of the Project

JULY 2019
School District Coordination Begins

2020

OCTOBER 2021
Phase 2 Construction Substantially Complete

2021

NOVEMBER 2022
Phase 3 Construction Substantially Complete

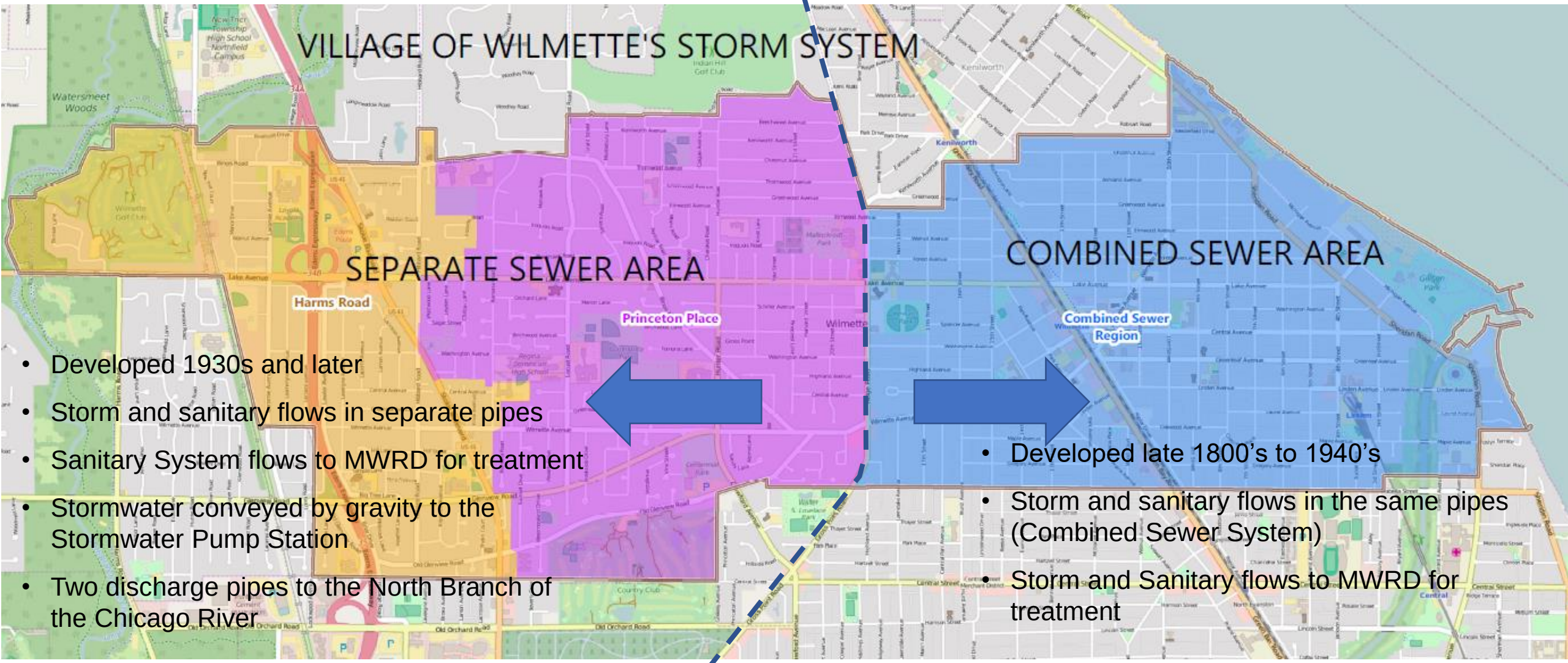
2022

APRIL 2022
Phase 3 Construction Begins

THE VILLAGE OF
Wilmette
EST. 1872


Village of Wilmette
Neighborhood Storage Project
Overall Project Update
December 2022
Wilmette
wsnsp.com
STORMWATER

VILLAGE OF WILMETTE'S SEWER SYSTEMS

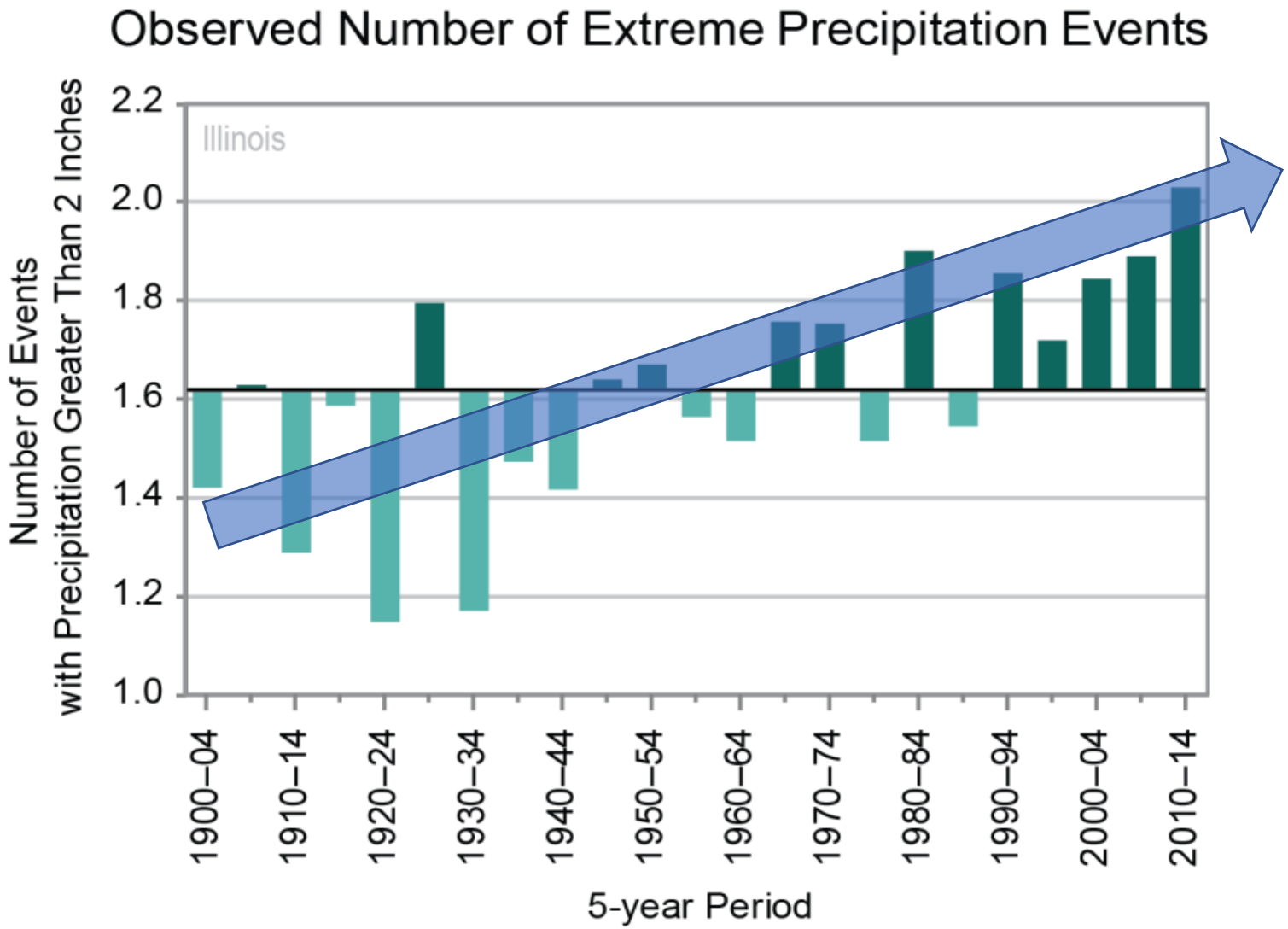


- Developed 1930s and later
- Storm and sanitary flows in separate pipes
- Sanitary System flows to MWRD for treatment
- Stormwater conveyed by gravity to the Stormwater Pump Station
- Two discharge pipes to the North Branch of the Chicago River

- Developed late 1800's to 1940's
- Storm and sanitary flows in the same pipes (Combined Sewer System)
- Storm and Sanitary flows to MWRD for treatment

Ridge Road Divides the Combined Sewer Area and the Separate Sewer Area

WILMETTE HAD 5 STORMS IN RECENT HISTORY EXCEEDING A 10-YEAR EVENT AND A LOOK INTO THE FUTURE IS TROUBLING….



VILLAGE-WIDE SEWER INFRASTRUCTURE IMPROVEMENTS

Total investment since 1990
$78 MILLION

COMBINED SEWER AREA

- Relief Sewers, Inlet Restrictors and Drainage Berms in the street to create temporary “street detention”

SEPARATE SEWER AREA

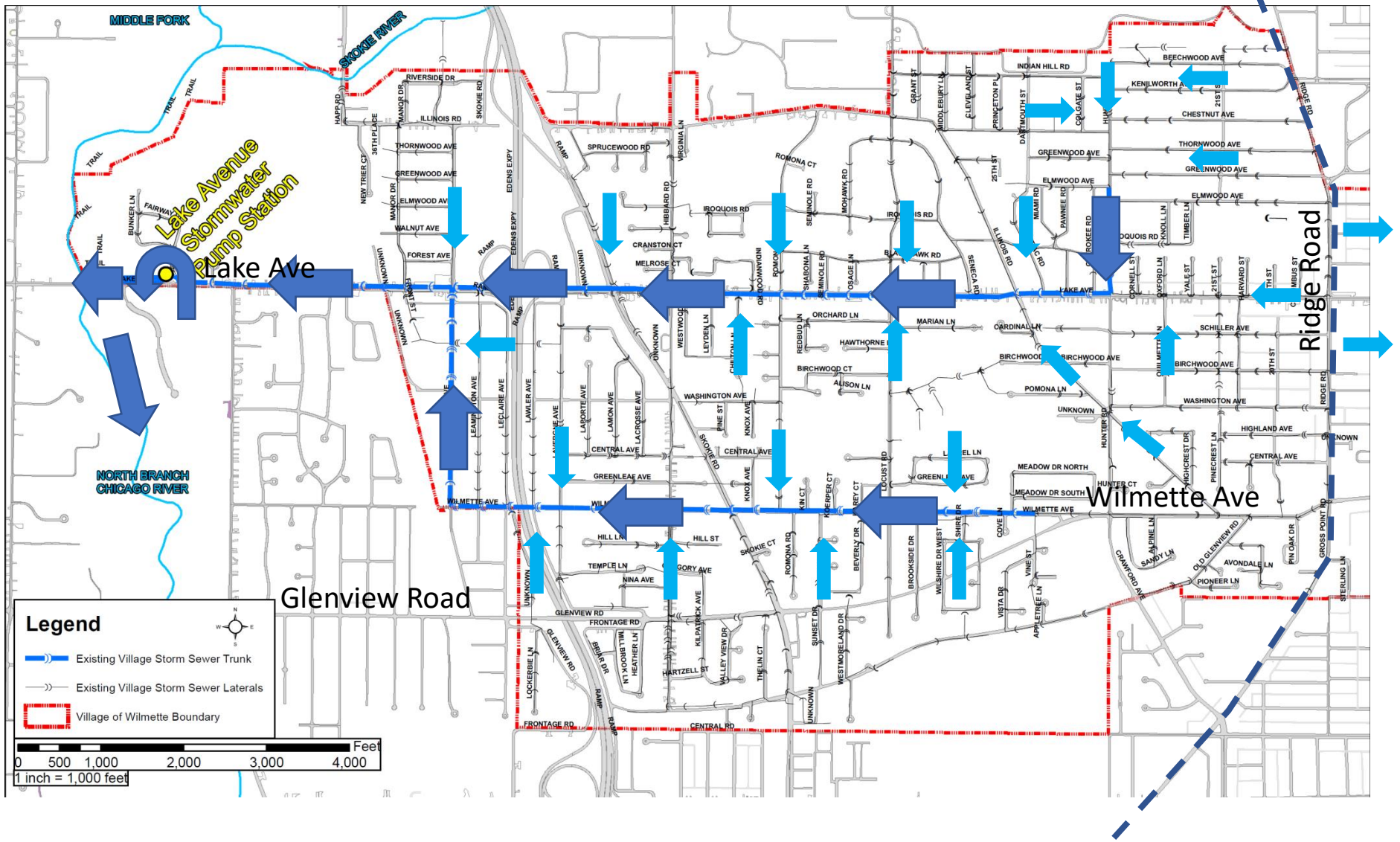
- Sanitary Relief Sewers
- Second Stormwater Outfall
- Backup Generator at Stormwater Pump Station

VILLAGE-WIDE MAINTENANCE

- Sewer Cleaning/Televising/Lining

IDENTIFYING THE PROBLEM

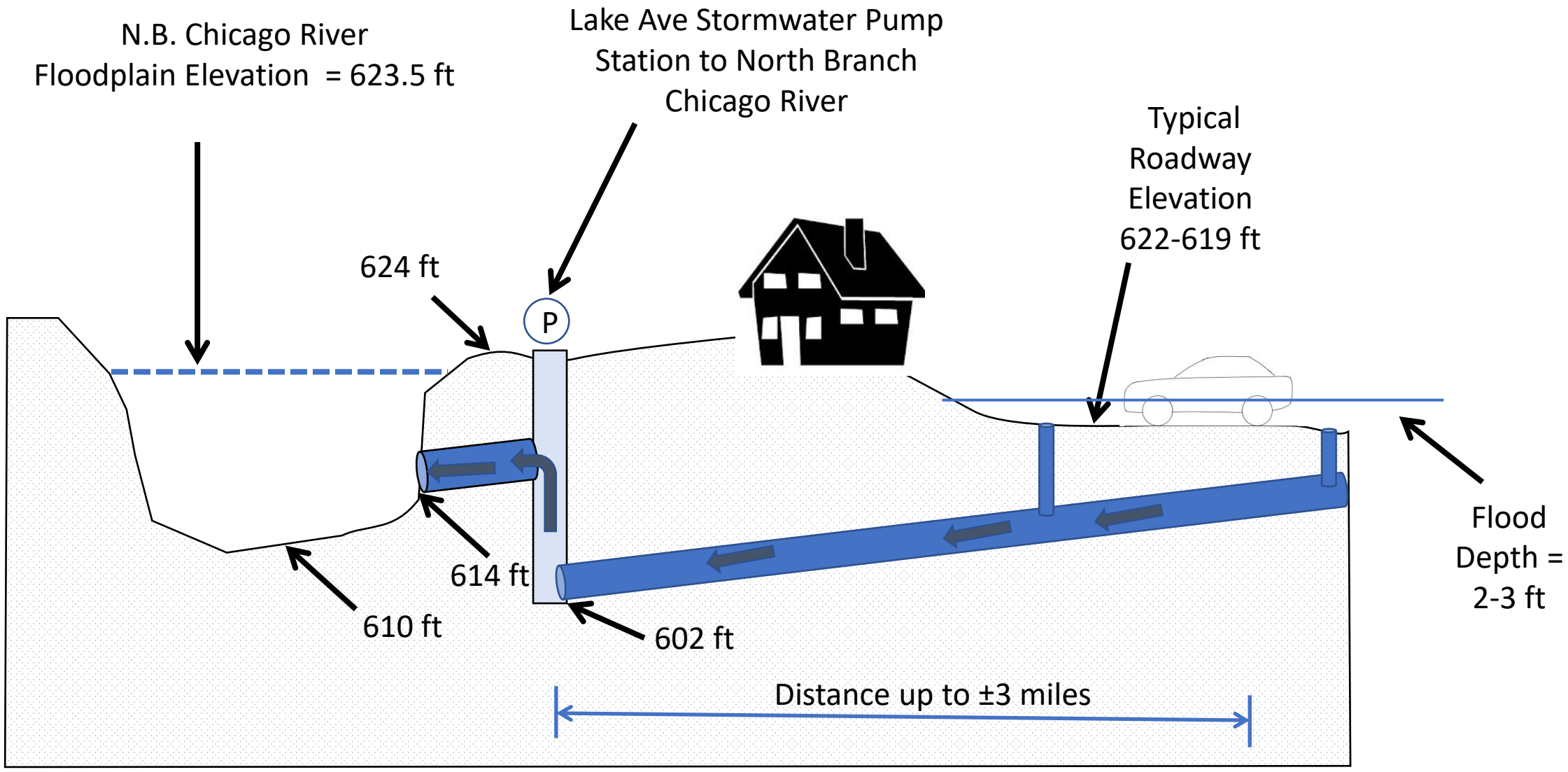
VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN



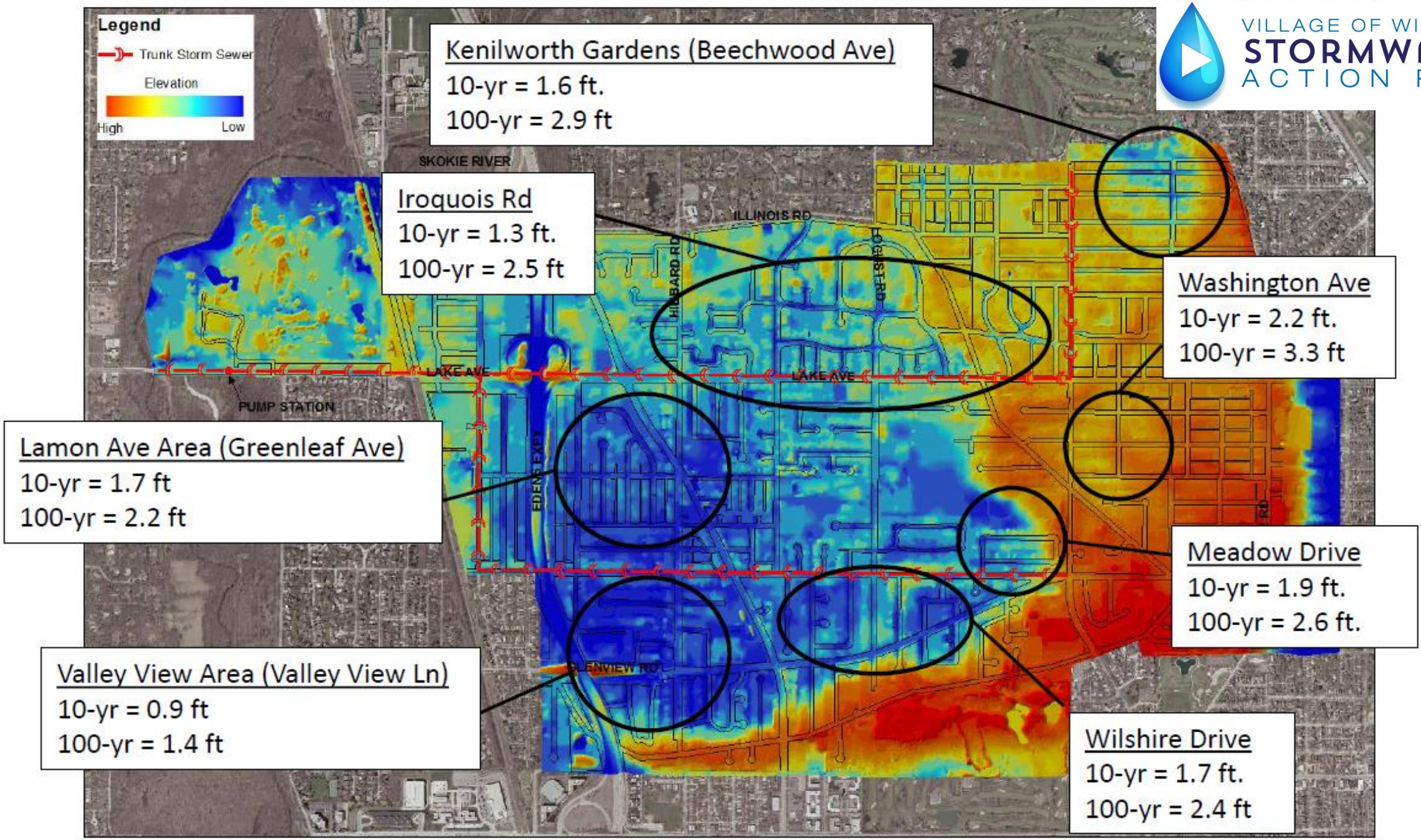
- Highly developed land
- Designed without stormwater management practices
- Limited open space
- No defined overflow routes

IDENTIFYING THE PROBLEM

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN



Bottleneck was insufficient storm sewer capacity



VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

Kenilworth Gardens (Beechwood Ave)
10-yr = 1.6 ft.
100-yr = 2.9 ft

Iroquois Rd
10-yr = 1.3 ft.
100-yr = 2.5 ft

Washington Ave
10-yr = 2.2 ft.
100-yr = 3.3 ft

Lamon Ave Area (Greenleaf Ave)
10-yr = 1.7 ft
100-yr = 2.2 ft

Meadow Drive
10-yr = 1.9 ft.
100-yr = 2.6 ft.

Valley View Area (Valley View Ln)
10-yr = 0.9 ft
100-yr = 1.4 ft

Wilshire Drive
10-yr = 1.7 ft.
100-yr = 2.4 ft

CBBEL: From Jan 28, 2015 MSC Presentation

EXISTING CONDITIONS – 100-YR STORM

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

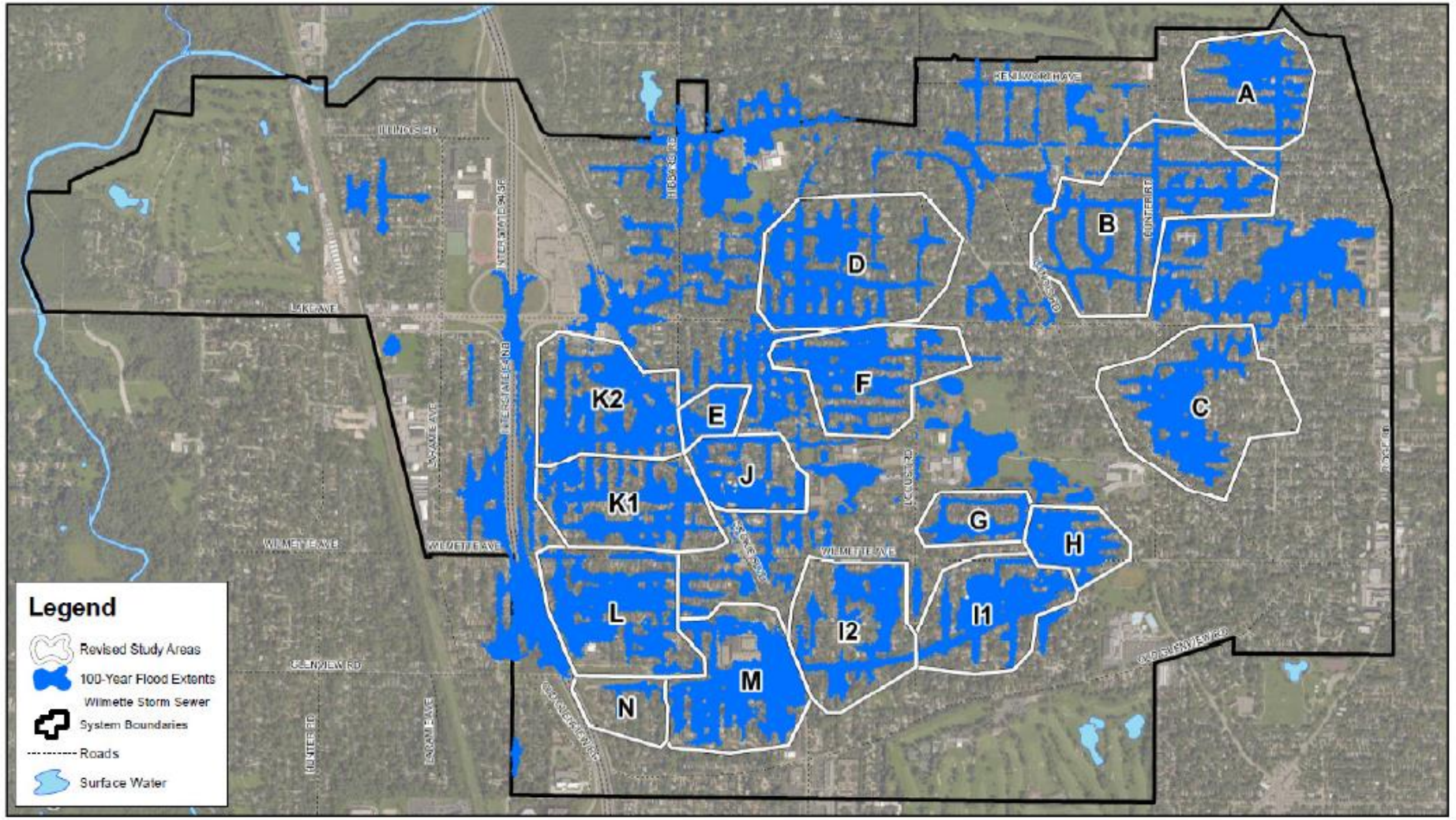


Figure A2 - 100-Year Existing Condition Flood Extents
Storm Sewer Study Reduced Cost Analysis
Village of Wilmette

Date Printed: 6/29/2017

The blue shaded areas represent flooding

MWH now part of Stantec

THE RESULT: STRUCTURES AND PARCELS IMPACTED

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

Storm Event	Structures Impacted [1]	Parcels Flooded [2]
10-year	311	1,268
100-year	1305	2,779

1. Flood water to within 1-foot of highest lot elevation
2. Flood water reaches private property
    - 5,444 total parcels west of Ridge

RESULT: WIDESPREAD FLOODING DURING RAIN EVENTS

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

- Property damage
- Anxiety and stress for homeowners
- As long as 17 hours of standing water
- Inaccessible streets

IDENTIFYING THE OPTIONS

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

SEPT 2013

The Village Board approved a contract with CBBEL for the Separate Storm Sewer Study.

The Village reviewed a number of potential projects which were deemed not cost effective or did not provide adequate flood relief including:

- Purchase of homes impacted by flooding
  - ❖Too costly and not effective
- Green infrastructure as the primary solution
  - ❖Green improvements can be complimentary to any project but are not sufficient as a stand-alone improvement to provide flood relief
- Nine different variations of conveyance and storage projects

IDENTIFYING THE OPTIONS

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

SEPT 2013	The Village Board approved a contract with CBBEL for the Separate Storm Sewer Study.
JAN 2017	The Village Board approved a contract with Stantec to conduct a technical and alternatives review.
DEC 2017	The Village Board narrowed the Options to three for final consideration.

THE OPTIONS

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

1

SEWER EXPANSION

- 8.3 miles of new storm sewer

2

SEWER EXPANSION & NEIGHBORHOOD STORAGE HYBRID

- 5.4 miles of new storm sewer and stormwater storage at Thornwood Park

3

NEIGHBORHOOD STORAGE

- 3.3 miles of new storm sewer and stormwater storage at Thornwood Park, Centennial Park and Hibbard Park

4

DO NOTHING

PUBLIC PROCESS TO BUILD TRUST AND CONSENSUS

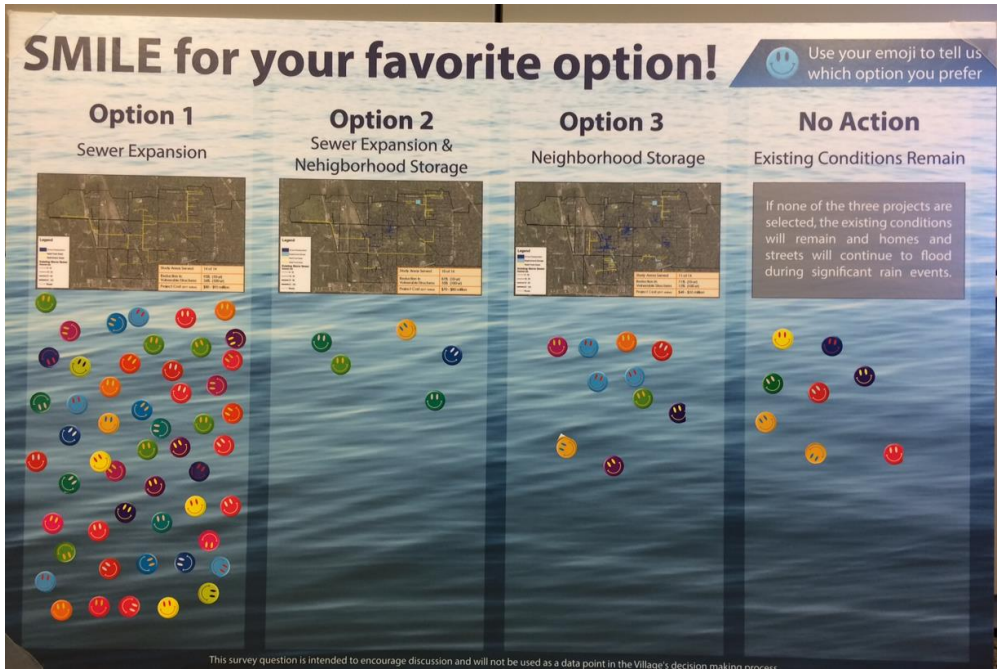
VILLAGE OF WILMETTE STORMWATER ACTION PLAN

Given the magnitude of the capital investment under consideration, the Village undertook an extensive public education campaign over a 4-month period:

- Sent three mailers to all Wilmette addresses (11,000+ addresses)
- Held two open houses with more than 100 residents attending
- 6,000 visitors reviewed the website dedicated to stormwater improvements
- Engaged the community through an online community portal
- Produced a public education video
- Received more than 300 email communications


Existing Conditions – 10-yr Storm


VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN
HOMEOWNER
TIPS


SMILE for your favorite option!
Use your emoji to tell us which option you prefer
Option 1
Sewer Expansion
Option 2
Sewer Expansion & Nehigborhood Storage
Option 3
Neighborhood Storage
No Action
Existing Conditions Remain
If none of the three projects are selected, the existing conditions will remain and homes and streets will continue to flood during significant rain events.
This survey question is intended to encourage discussion and will not be used as a data point in the Village's decision making process.

PUBLIC PROCESS TO BUILD TRUST AND CONSENSUS

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

SEPT 2013	The Village Board approved a contract with CBBEL for the Separate Storm Sewer Study.
JAN 2017	The Village Board approved a contract with Stantec to conduct a technical and alternatives review.
DEC 2017	The Village Board narrowed the Options to three for final consideration.
APR 2018	The Village Board approved the Neighborhood Storage Project

The Village held over 50 public meetings over 10 years

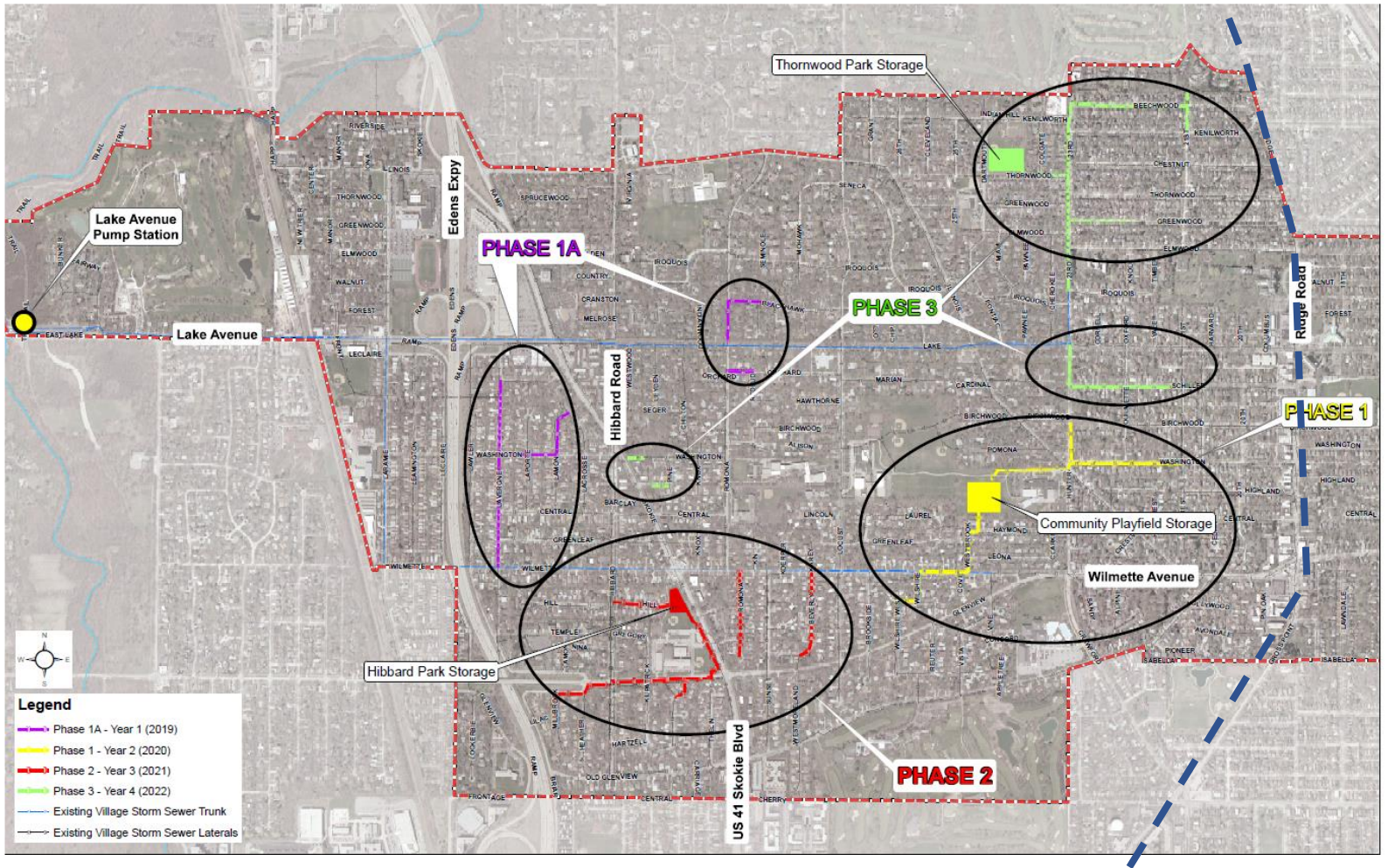
PROJECT DESIGN & CONSTRUCTION EXECUTION (2018 – 2022)

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

FEB 2019

The final optimized plan for Option 3 is approved

- 14 Million Gallons of Stormwater Storage in 3 Village Parks
  (21 Olympic Swimming Pools)
- 5 miles of storm sewer
- Cost Estimate = $68M
- 98% protection level for 10-year event (305/311)
- Timeframe = 4 years
- Phases 1A - 3



PROJECT TEAM

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

Internal Team

THE VILLAGE OF Wilmette EST. 1872

CBB

BAXTER & WOODMAN Consulting Engineers

HMG ENGINEERS

Stanley Consultants INC.

StormTrap MODULAR CONCRETE STORMWATER MANAGEMENT

External Team & Partners

WILMETTE PARK DISTRICT EST. 1908

GHA GEWALT HAMILTON ASSOCIATES, INC. CONSULTING ENGINEERS

Wilmette PUBLIC SCHOOLS DISTRICT 39

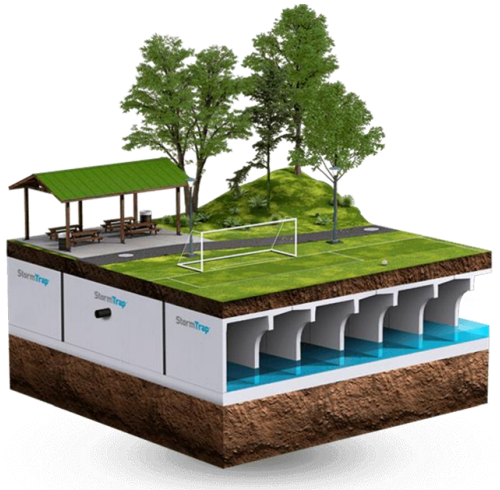
Village Residents

PARTNERSHIPS – THE WILMETTE PARK DISTRICT

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

The fundamental concept of the Neighborhood Storage Project was to store excess runoff in locations near where it fell. It was determined that 3 parks within the Village (and owned by the Wilmette Park District) were suitable:

- Community Playfield (Phase 1 – Construction 2020)
  - Largest park within the Village and region
  - Heavily used for athletics (soccer, baseball, others)
  - Located between Highcrest Middle School and Wilmette Junior High
- Hibbard Park (Phase 2 – Construction 2021)
  - Located immediately adjacent to Community Recreation Center
  - Future expansion potential for building expansion
  - Baseball and soccer uses
- Thornwood Park (Phase 3 – Construction 2022)
  - Dedicated little league baseball organization and neighborhood group
  - Located across the street from Harper Elementary School



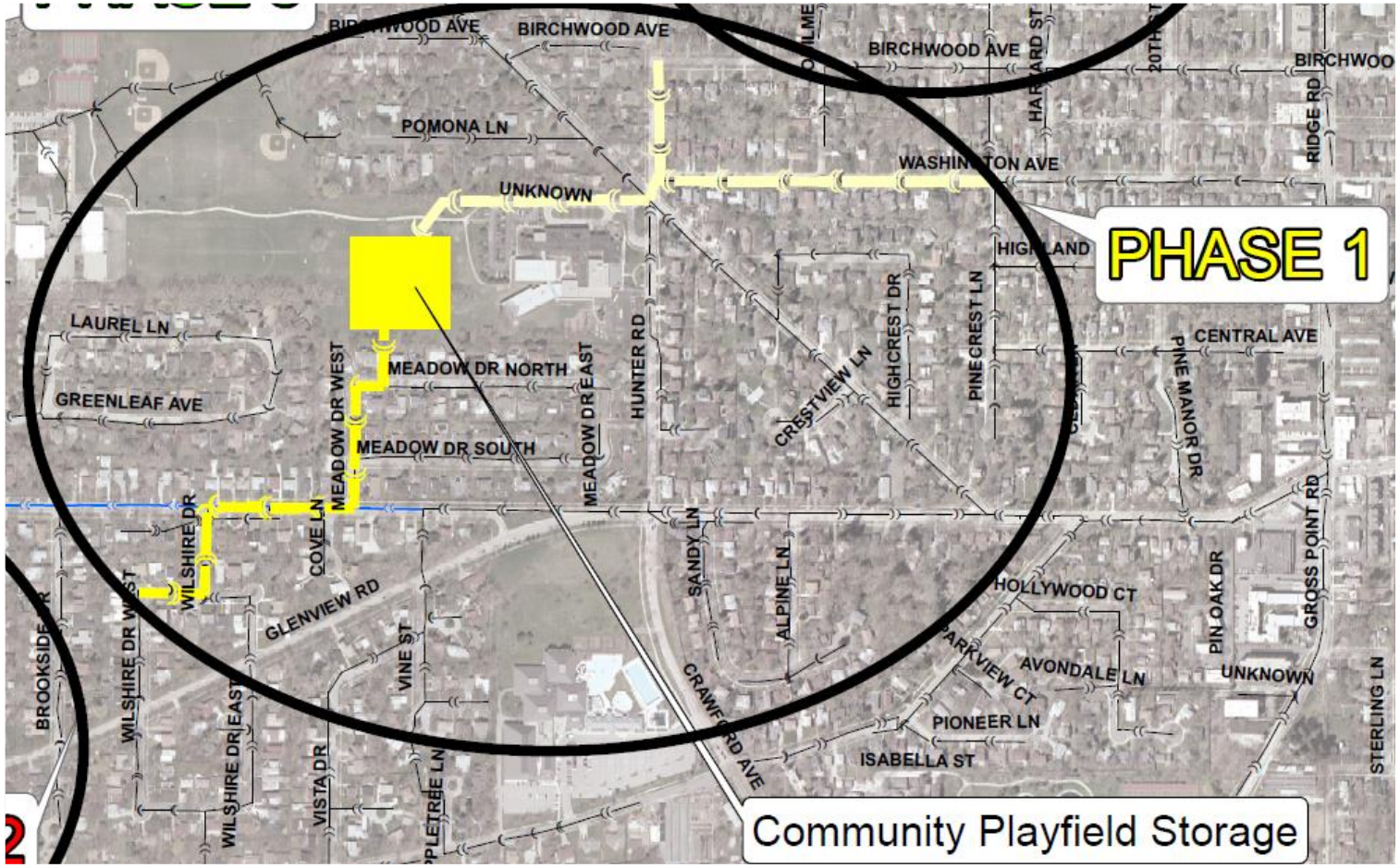
Stormtrap Underground Vault System

PHASE 1 & COMMUNITY PLAYFIELD CONSTRUCTION YEAR 2020

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

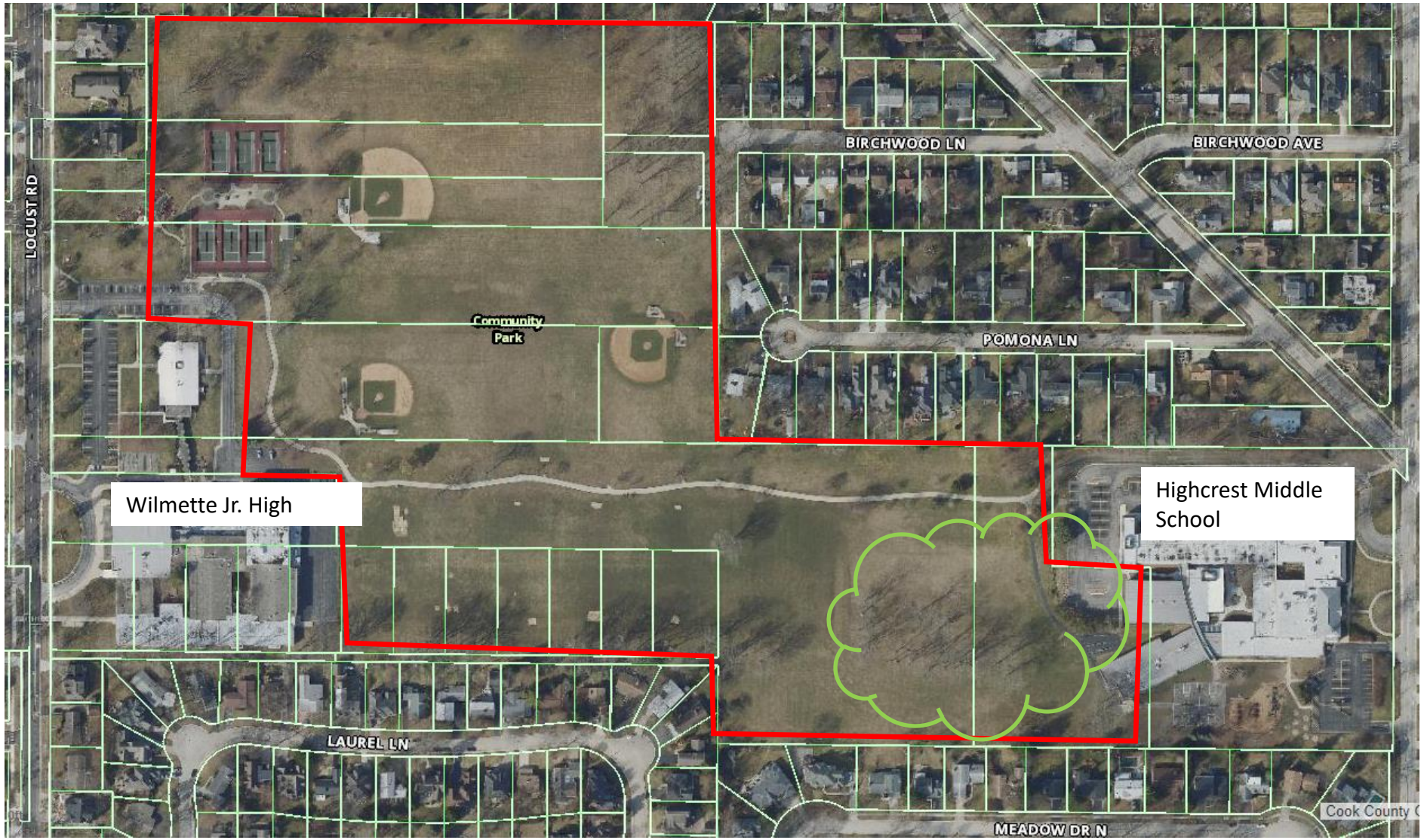
- Project Features
  - Storage Volume = 20.3 Acre-ft
    - 18.6 acre-ft flood control
    - 1.7 acre-ft stormwater detention
    - 2,300 Stormtrap pieces
  - 5,800 linear feet of storm sewers

- Design Challenges:
  - Storage Vault Located on Park District Property between two schools
  - Largest of all the vaults
  - Largest Park and Open Space in region – nearly 40 acres
  - 3 Easements and 2 IGAs required



PHASE 1 – COMMUNITY PLAYFIELD

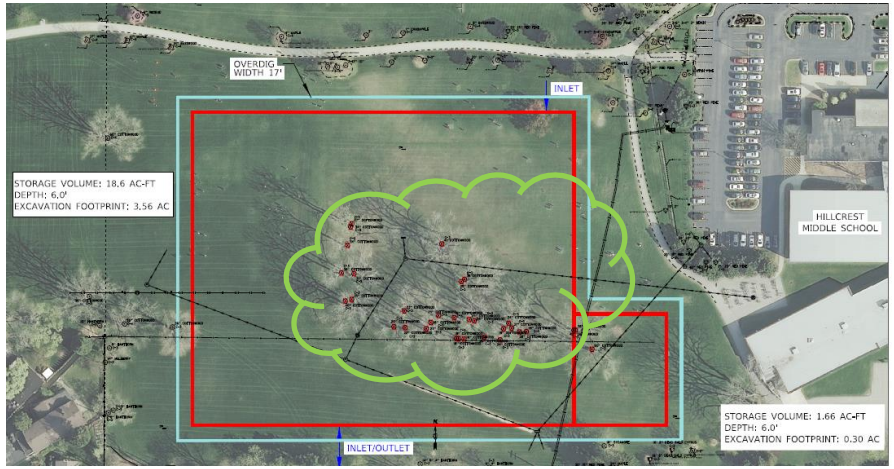
VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

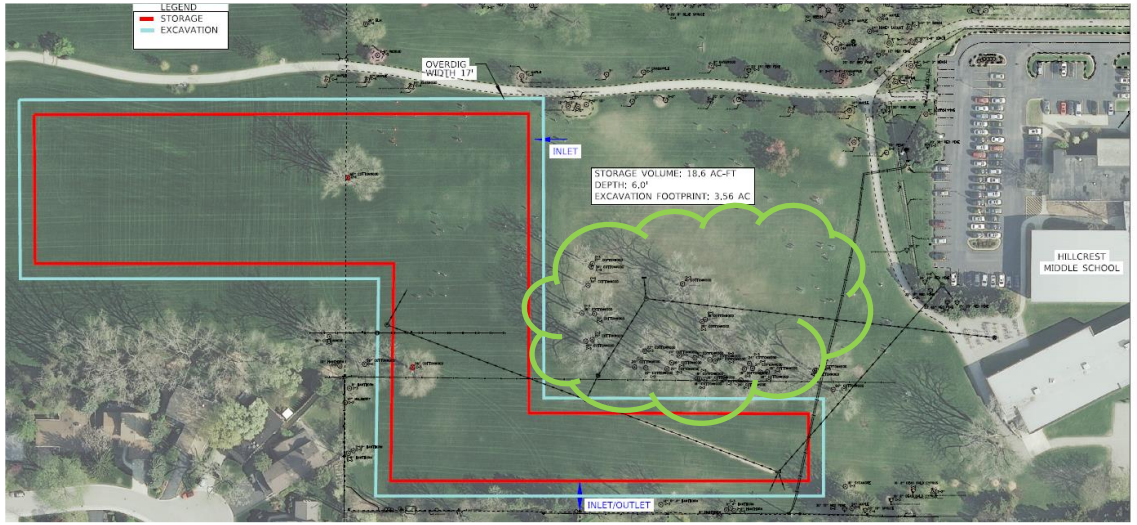


PHASE 1 – COMMUNITY PLAYFIELD PARK DISTRICT PARTNERSHIP

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

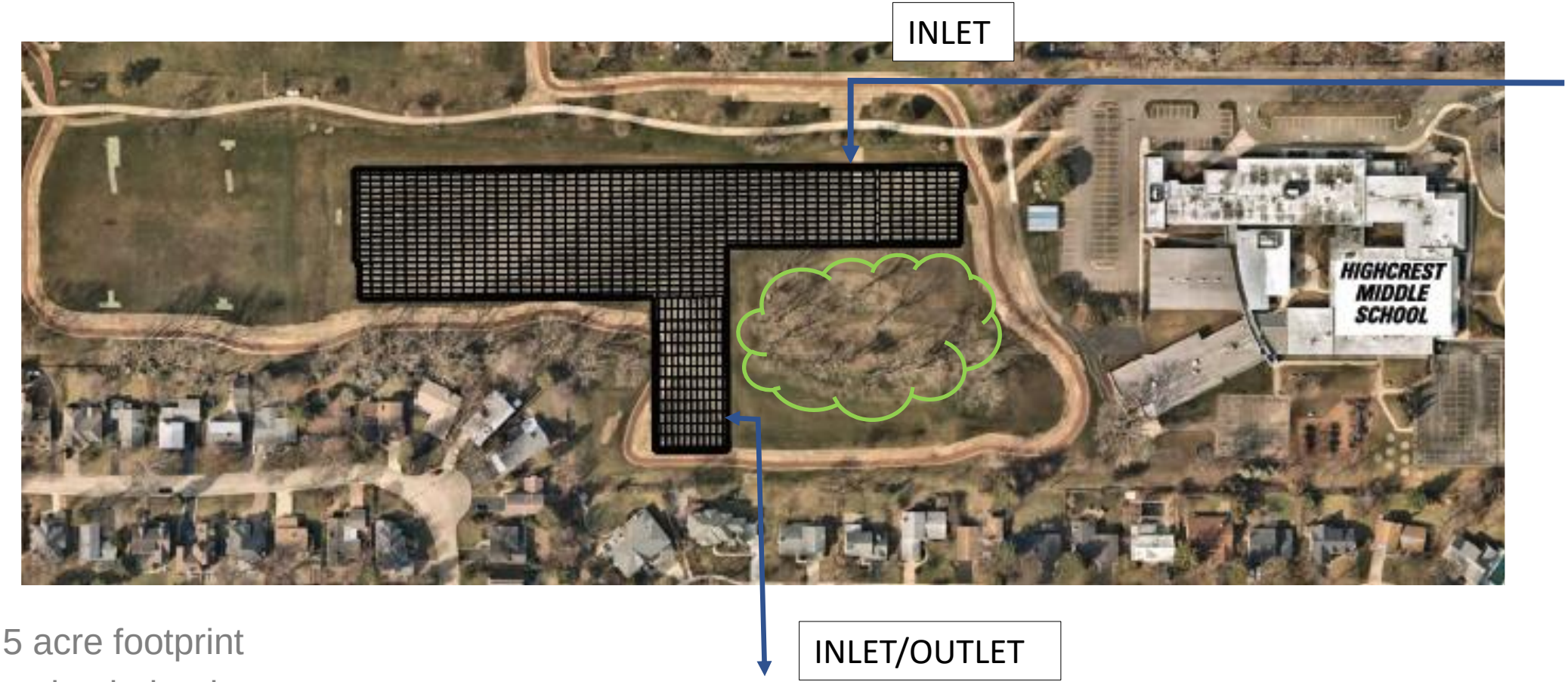
- Onsite and Park District Board Meetings
- Tree Removal was biggest issue – Cottonwood Grove
- Field grading and inlet structure locations
- Multiple alternatives analyzed
- Disruption of Park Use During Construction
- Park Amenities (IGA)
  - Tree preservation plans with vault layouts incorporated into IGA and Easements
  - Specific drainage improvements at Community Playfield
  - Drainage improvements outside of work zone
  - Comprehensive Landscaping Plan (all 3 parks)
  - Irrigation (2 parks*)
  - Public Restrooms (2 parks*)
  - Recreational Path with Lighting (1 park)
- Total Cost of IGA = $3.4M for all 3 parks





PHASE 1 – COMMUNITY PLAYFIELD FINAL DESIGN

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

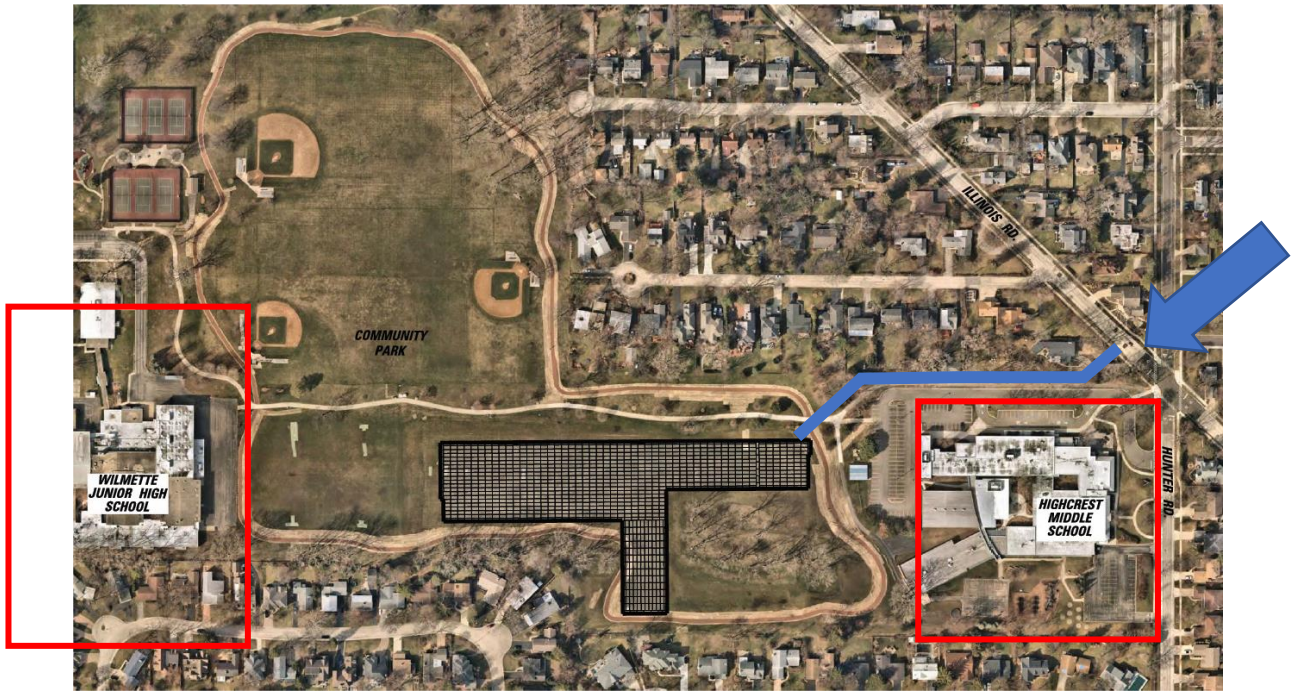


- 3.5 acre footprint
- Gravity drained
- Height of StormTrap = 6-7 feet
- 2 trees to be removed

PHASE 1 - SCHOOL DISTRICT 39 PARTNERSHIP

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

- Phase 1 Flood Storage at Community Playfield
- Location is landlocked between two schools and residential properties
- Small portion of vault and storm sewer on school property



Access route through Highcrest Middle School Parking Lot

This was the largest Stormtrap vault in Illinois by number of pieces (2,300)

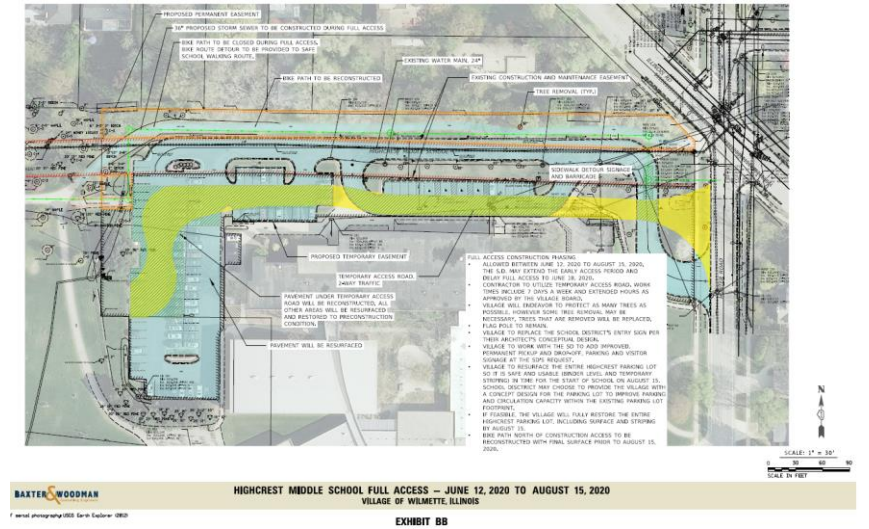
An estimated 50,000 cubic yards of soil needed to be removed, requiring 200 trucks/day

SCHOOL DISTRICT 39 COORDINATION

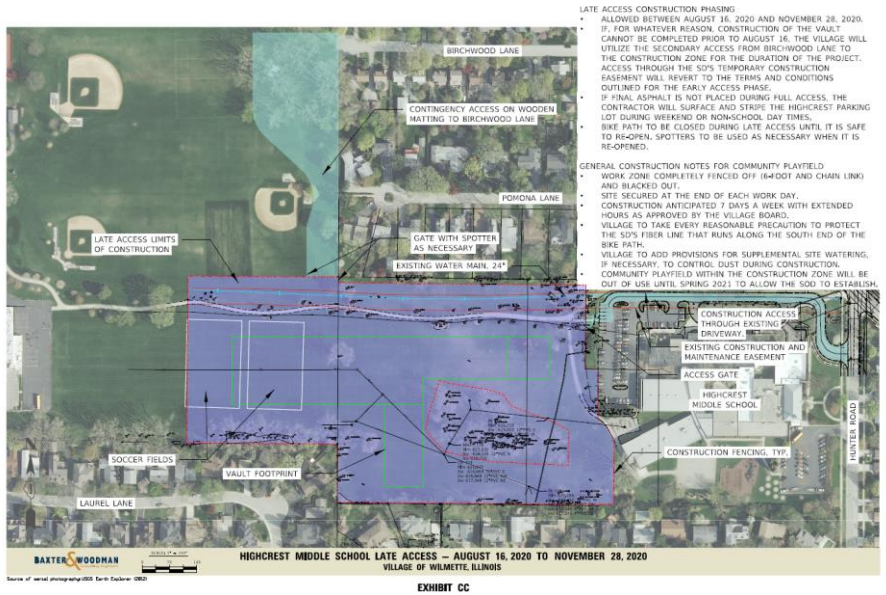
VILLAGE OF WILMETTE STORMWATER ACTION PLAN

- Components of IGA included:
  - **Access Plans (Early, Full, Late) for Summer construction**
  - Fencing and dust control during construction
  - Existing stormwater detention on school property was put underground as part of new vault
  - Driveway improvements
  - Temporary air conditioning at Highcrest School for dust prevention
  - New entry sign for school
  - New wireless communication system between schools
  - Vibration monitoring along haul route

Full Access



Late Access



PHASE 1 – COMMUNITY PLAYFIELD CONSTRUCTION STARTS APRIL 2020

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

- Berger Construction - $12M
  - StormTrap installation and park restoration
  - Storm sewers – 5,800 linear feet
- StormTrap Contract - $5M
- Total Phase 1 Cost - $17M
- Impacts (Benefits) of Covid
  - All Coordination Virtual
  - Construction Production Plan and H&S Plan
  - Virtual School – Opened Construction Window (silver lining)
- Excavation
  - 1,630,000 ft^3 of soil removed
  - 6,000 truck loads of material hauled
  - 200+ trucks/day
- StormTrap
  - 25+ trucks/day from April - August
  - Second largest vault in Illinois by volume
  - Largest by number of pieces
  - Total 20.2 acre-ft of stormwater storage
    - 6.5 Million Gallons
    - 10 Olympic Size Swimming Pools

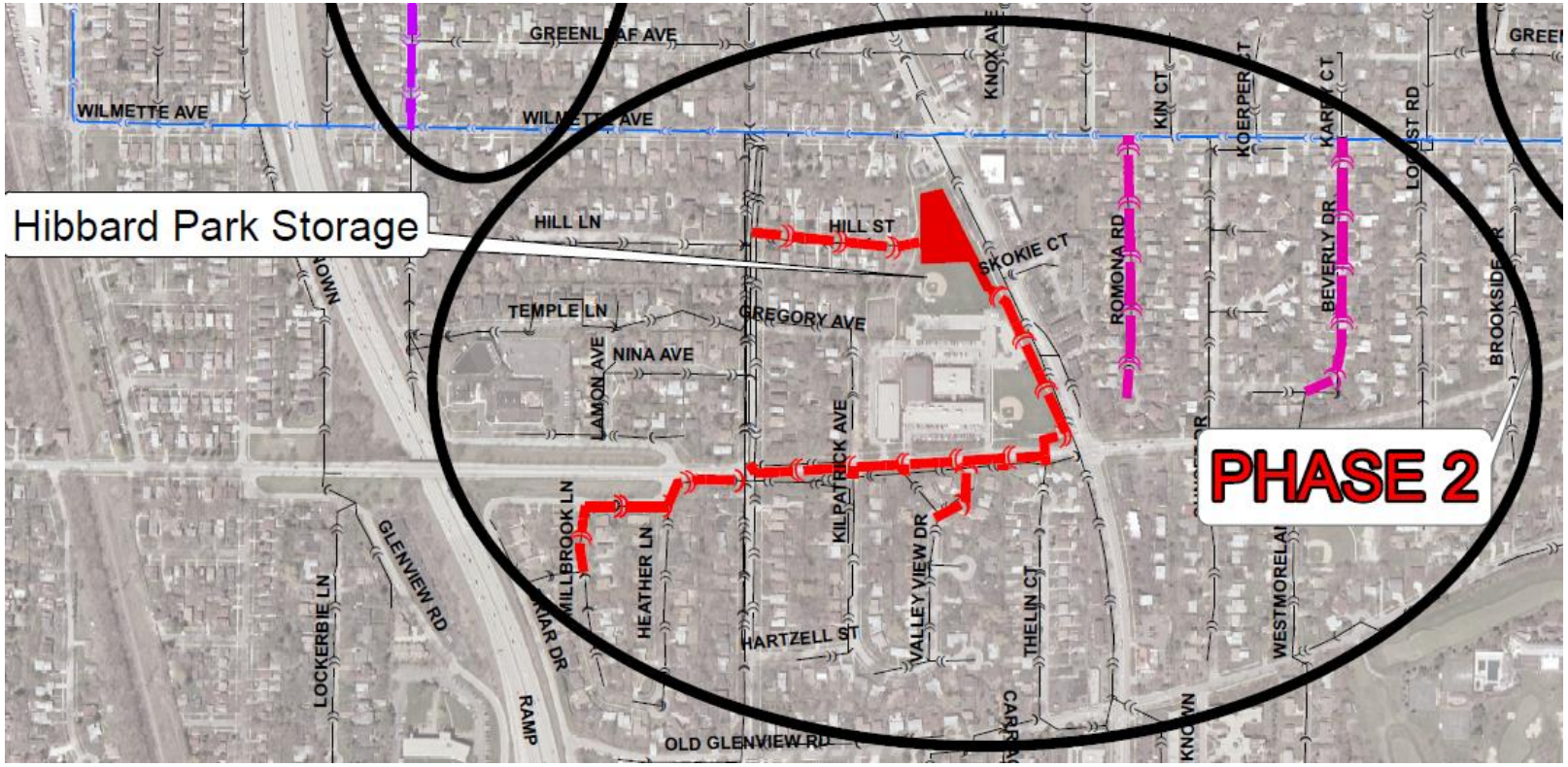
PHASE 1 – COMMUNITY PLAYFIELD CONSTRUCTION COMPLETE OCTOBER 2020

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

PHASE 2 – HIBBARD PARK CONSTRUCTION YEAR 2021

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

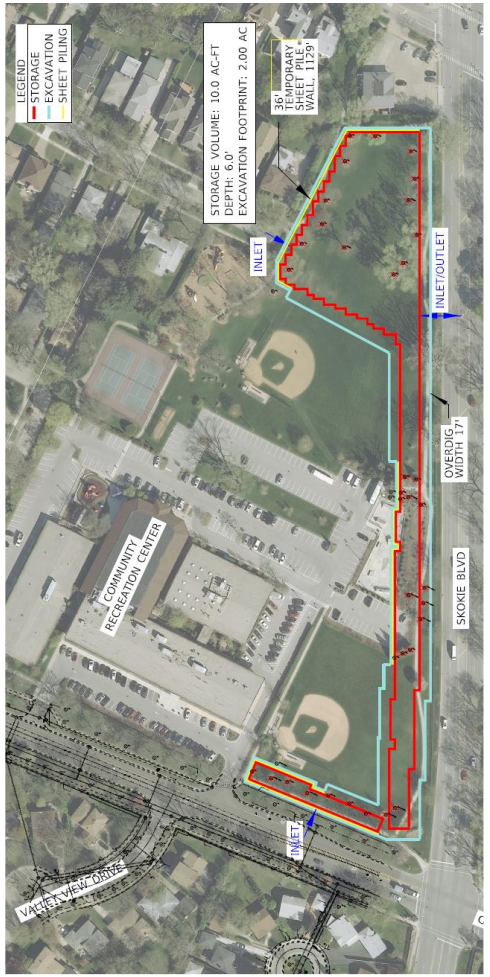
- Project Features
  - Storage Volume = 10.0 Acre-ft
    - 550 Stormtrap pieces
  - 6,900 linear feet of storm sewers in neighborhood
  - Stormwater pump station
    - De-water vault in 24 hours
- Design Challenges
  - Storage Vault Located entirely on Park District Property
  - Mature trees around Park perimeter
  - Space Restrictions
  - Park District Plans for Expanded Community Rec Center

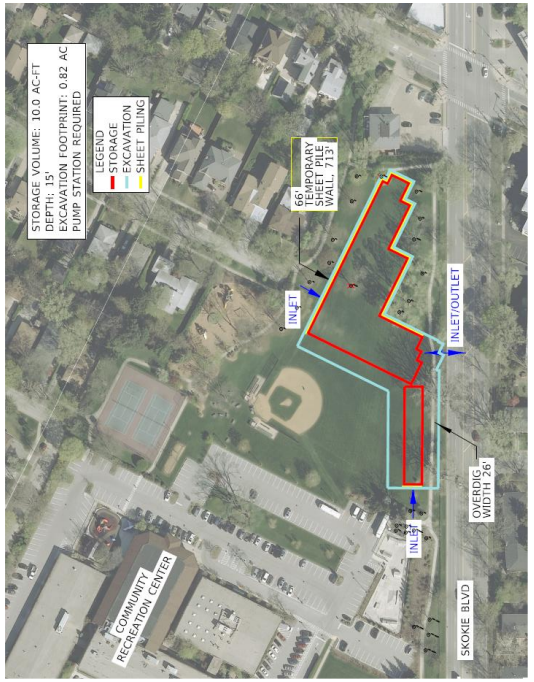


PHASE 2 – HIBBARD PARK
PARK DISTRICT COORDINATION

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

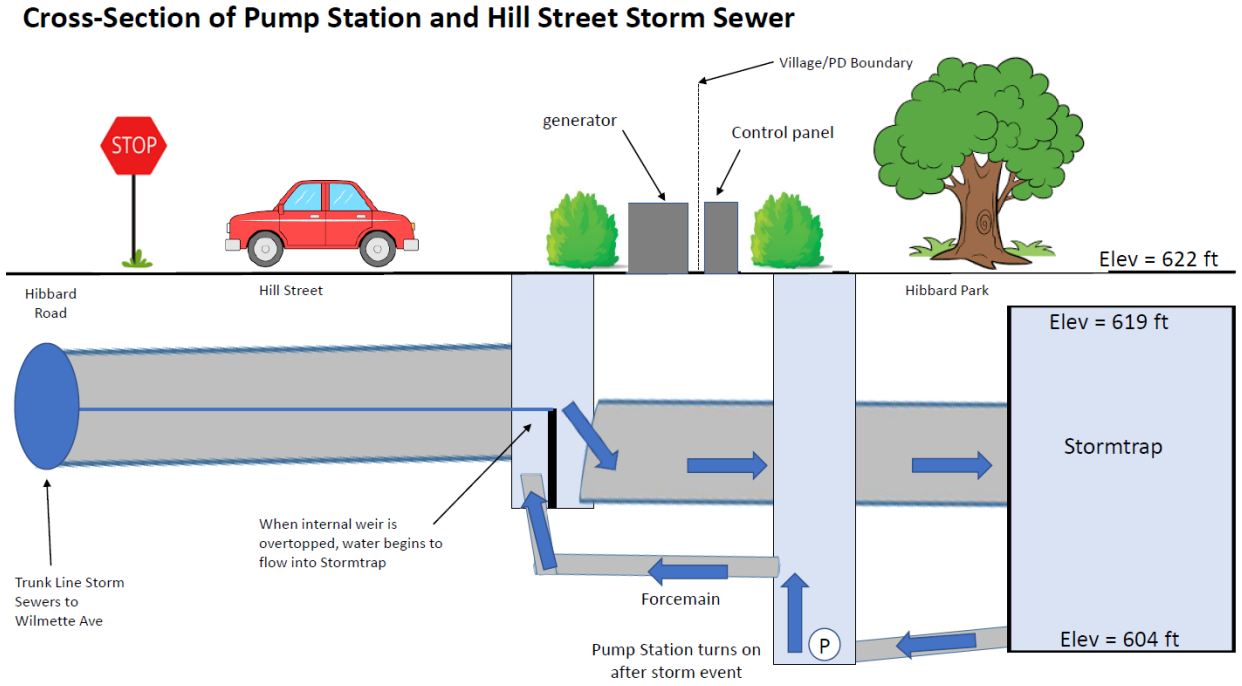
- On-site and Park District Board Meetings
- Tree Removal was biggest issue
- Future Considerations of Community Rec Center footprint must be honored
- Limited space for construction staging
- Multiple Layouts Evaluated
  - Trees Removed
  - Stormtrap Vault Depth
  - Field Layouts
- Park Amenities included in IGA
  - Drainage Improvements
  - Restoration of Fields
  - Location Drainage Structures in Fields
  - Comprehensive Landscaping Plan





PHASE 2 – HIBBARD PARK FINAL DESIGN

VILLAGE OF WILMETTE STORMWATER ACTION PLAN



- 1 acre footprint
- Height of StormTrap = 15 feet
- Pump Station, Backup Generator and Landscaping
- Detailed access and tree fencing plan
- 6 trees removed

PHASE 2 – HIBBARD PARK CONSTRUCTION STARTS FEB 2021

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

- V3 Companies - $10.2M
  - StormTrap installation and park restoration
  - Storm sewers – 6,900 linear feet
  - Pump Station
- StormTrap Contract - $1.6M
- Total Phase 2 Cost - $11.8M
- Excavation
  - 1,000,000 ft^3 of soil removed
  - 3,700 truck loads of material hauled
  - 100 trucks/day (tight footprint)
- StormTrap
  - 15+ trucks/day
  - Tallest Vault in Illinois at the time
  - Total 10 acre-ft of stormwater storage
    - 3.2 Million Gallons
    - 5 Olympic Size Swimming Pools

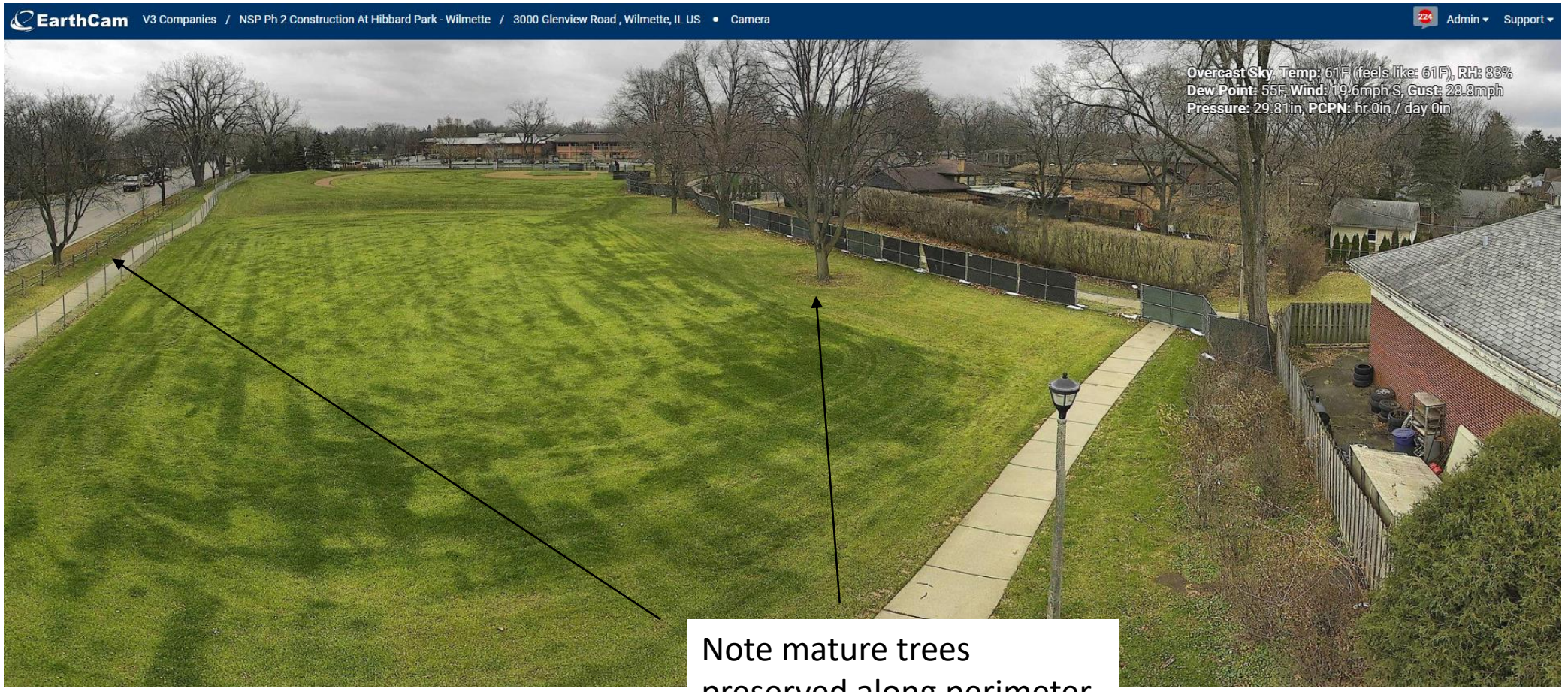
StormTrap Installation

StormTrap Installation

Pump Station Installation

PHASE 2 – HIBBARD PARK CONSTRUCTION COMPLETE SEPTEMBER 2021

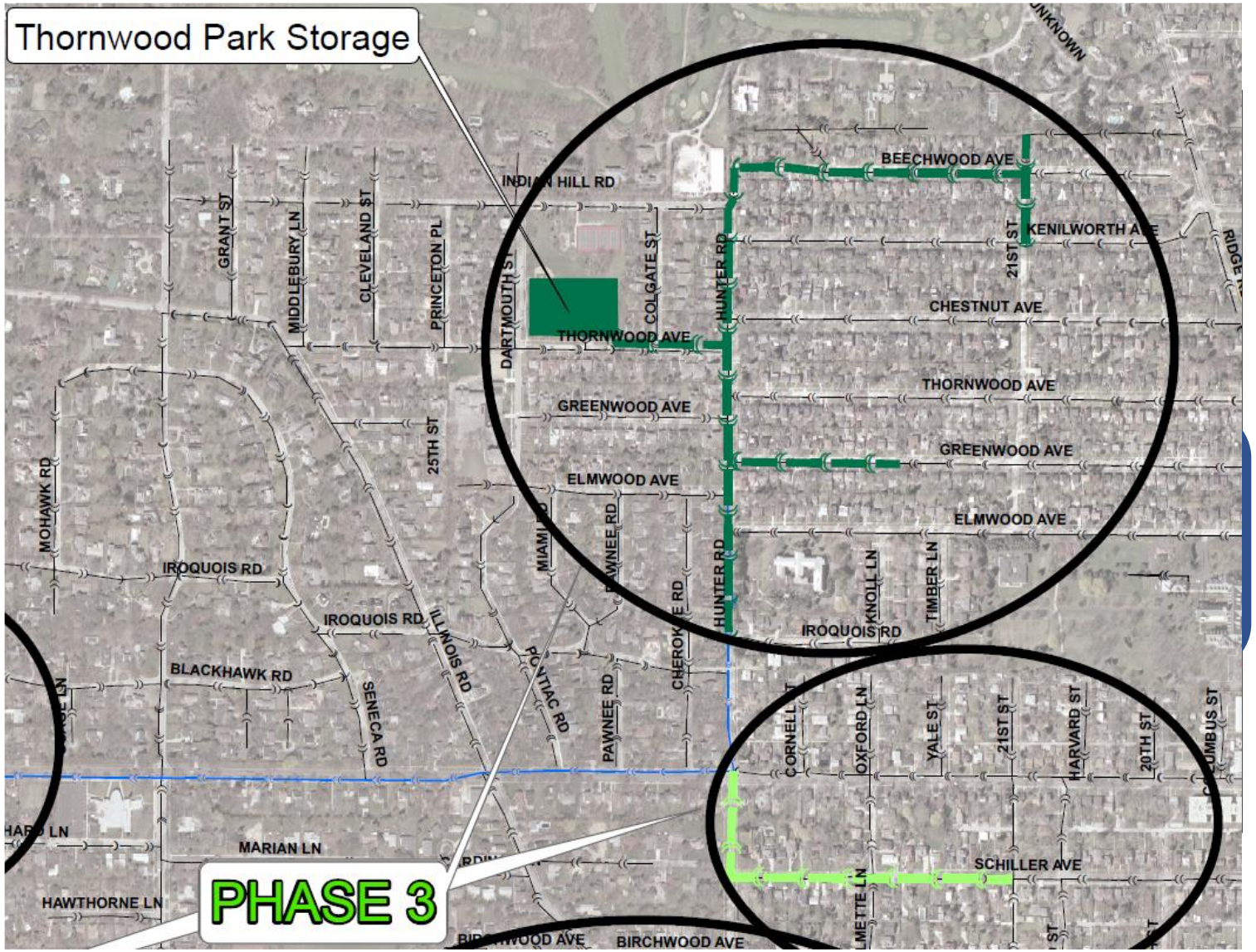
VILLAGE OF WILMETTE STORMWATER ACTION PLAN



PHASE 3 – THORNWOOD PARK CONSTRUCTION YEAR 2022

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

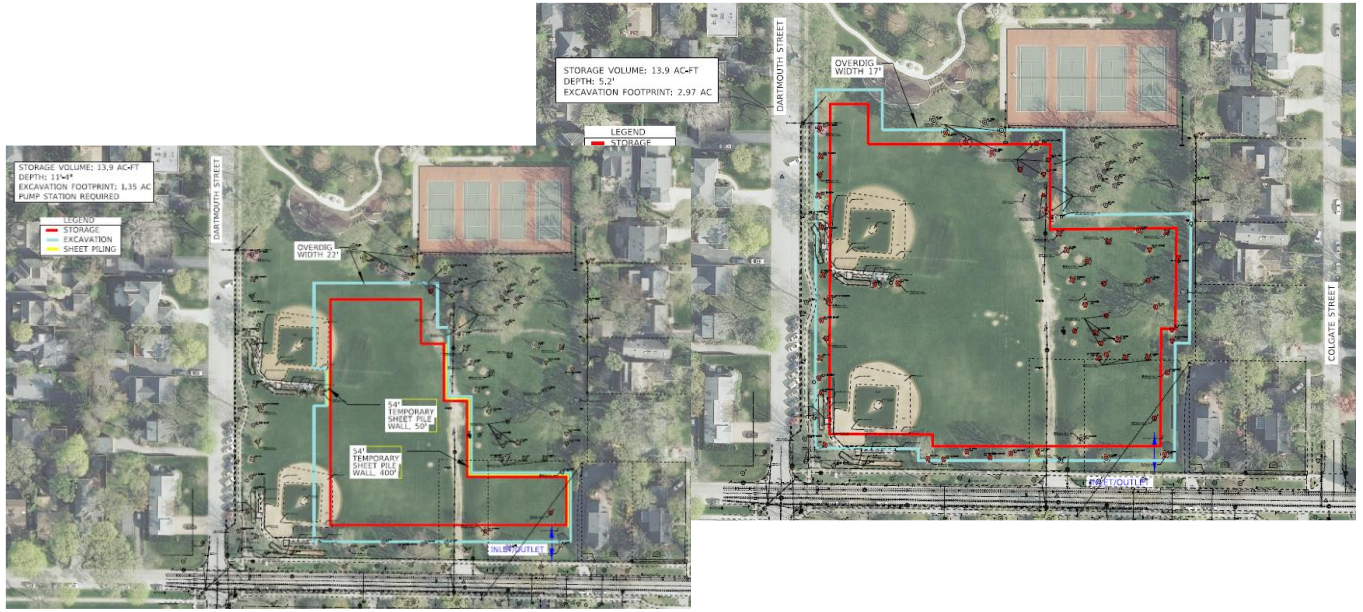
- Project Features
  - Storage Volume = 13.6 Acre-ft
    - 716 Stormtrap pieces
  - 7,500 linear feet of storm sewers in neighborhood
  - Stormwater pump station
    - De-water vault in 24 hours
- Design Challenges
  - Storage Vault Located entirely on Park District Property
  - Mature trees around Park perimeter
  - Space Restrictions in Park
  - Very active neighborhood group
  - Adjacent to Harper Elementary School
  - Narrow Roadways
  - Construction along school walking routes



PHASE 3 – THORNWOOD PARK
PARK DISTRICT COORDINATION

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

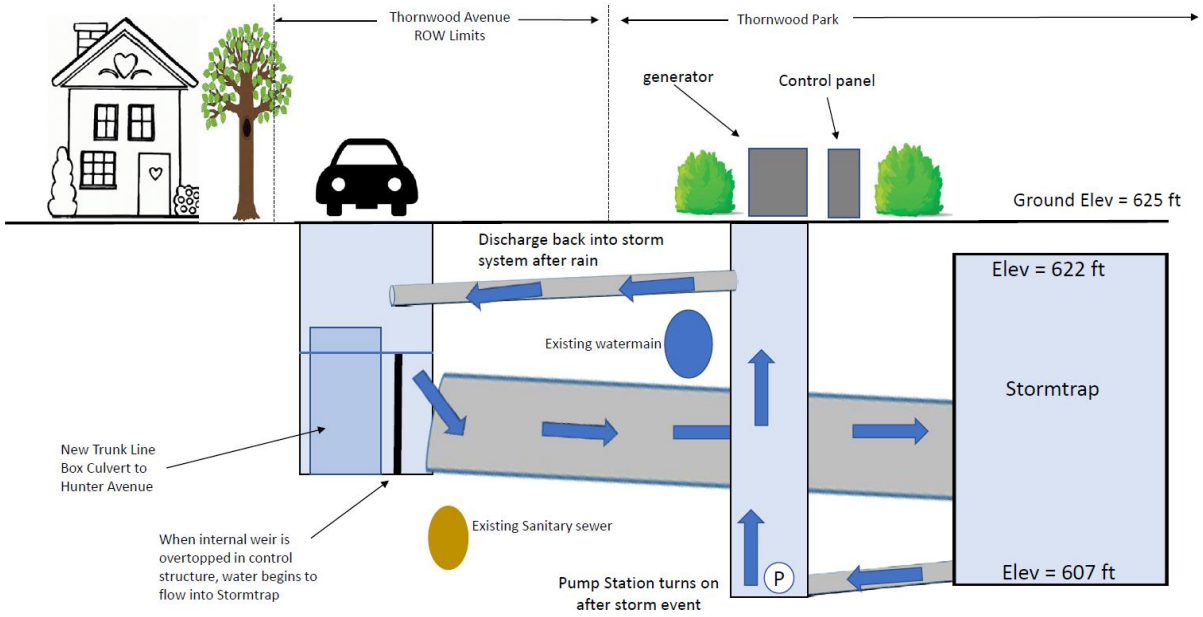
- On-Site and Park District Board Meetings
- Critical issue is tree removal
  - Mature trees throughout park
  - Multiple layouts evaluated
  - Construction Fence Alignment
  - Construction Access Locations
- Two little league baseball fields
  - Baseball Field Restoration
  - No Impact to backstops, bleachers, etc
- Pump Station location in park
  - Permanent access for Village
- Ice rink relocation and enhancements
- Construction Timing



PHASE 3 – THORNWOOD PARK FINAL DESIGN

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

Cross-Section of Pump Station and Thornwood Avenue Storm Sewer – Looking West



- 1.5 acre footprint
- Height of StormTrap = 15 feet
- Pump Station, Backup Generator and Landscaping
- Detailed access and tree fencing plan
- 2 trees removed

AN EVOLVING STRATEGY FOR RESIDENT ENGAGEMENT…..

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

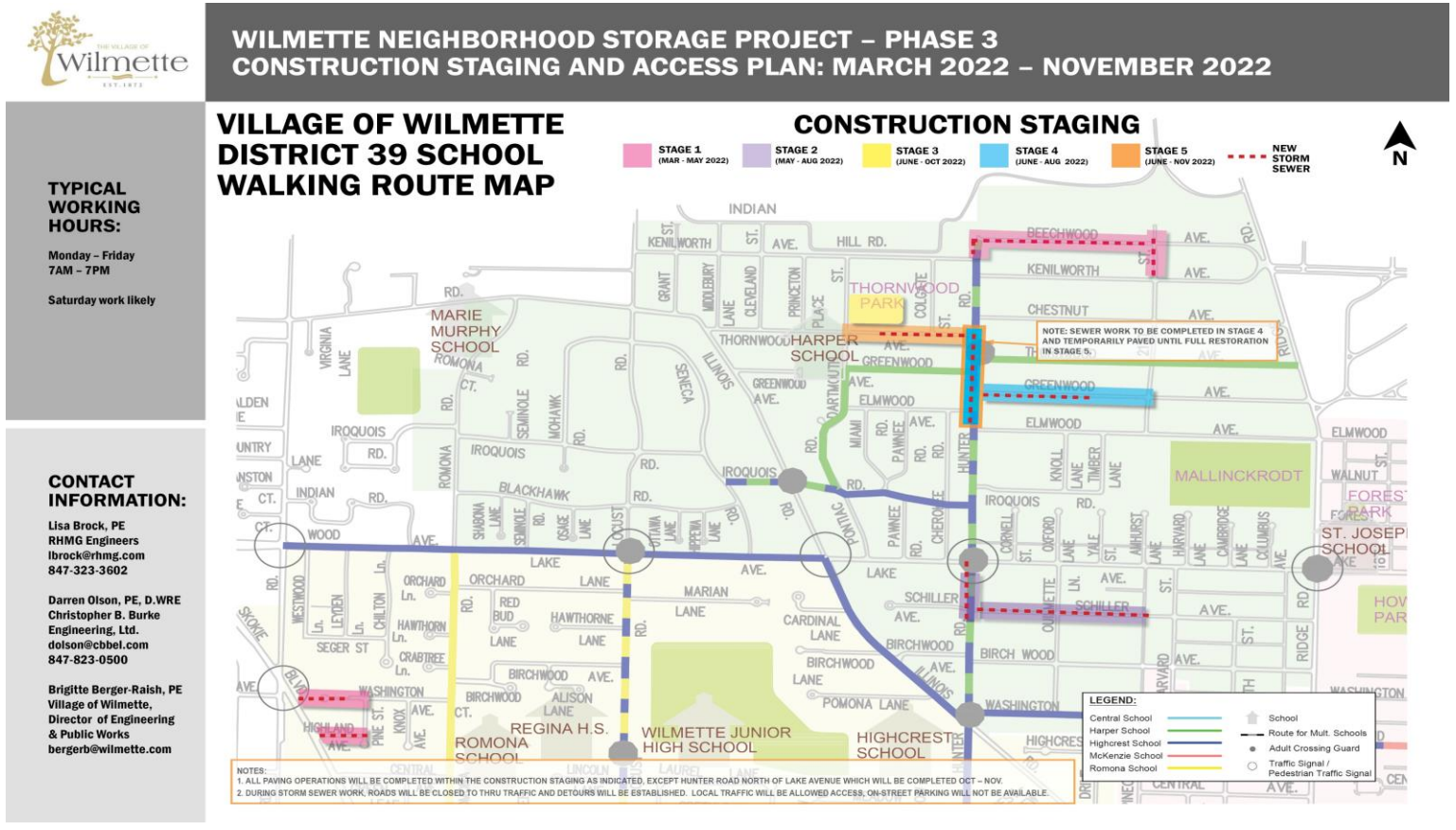
- 1 Virtual Meeting
- 2 On-site Open House Style Meetings
- Resident Concerns
  - Pump Station location and screening
  - Seed vs sod restoration
  - Generator – Permanent vs. Portable
  - Tree Preservation
  - Roadway Construction and Parking
  - Construction Schedule
  - School Traffic and walking routes
  - Safety due to Proximity of School

CRITICAL ISSUE - DETAILED STAGING PLAN REQUIRED FOR PHASE 3

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

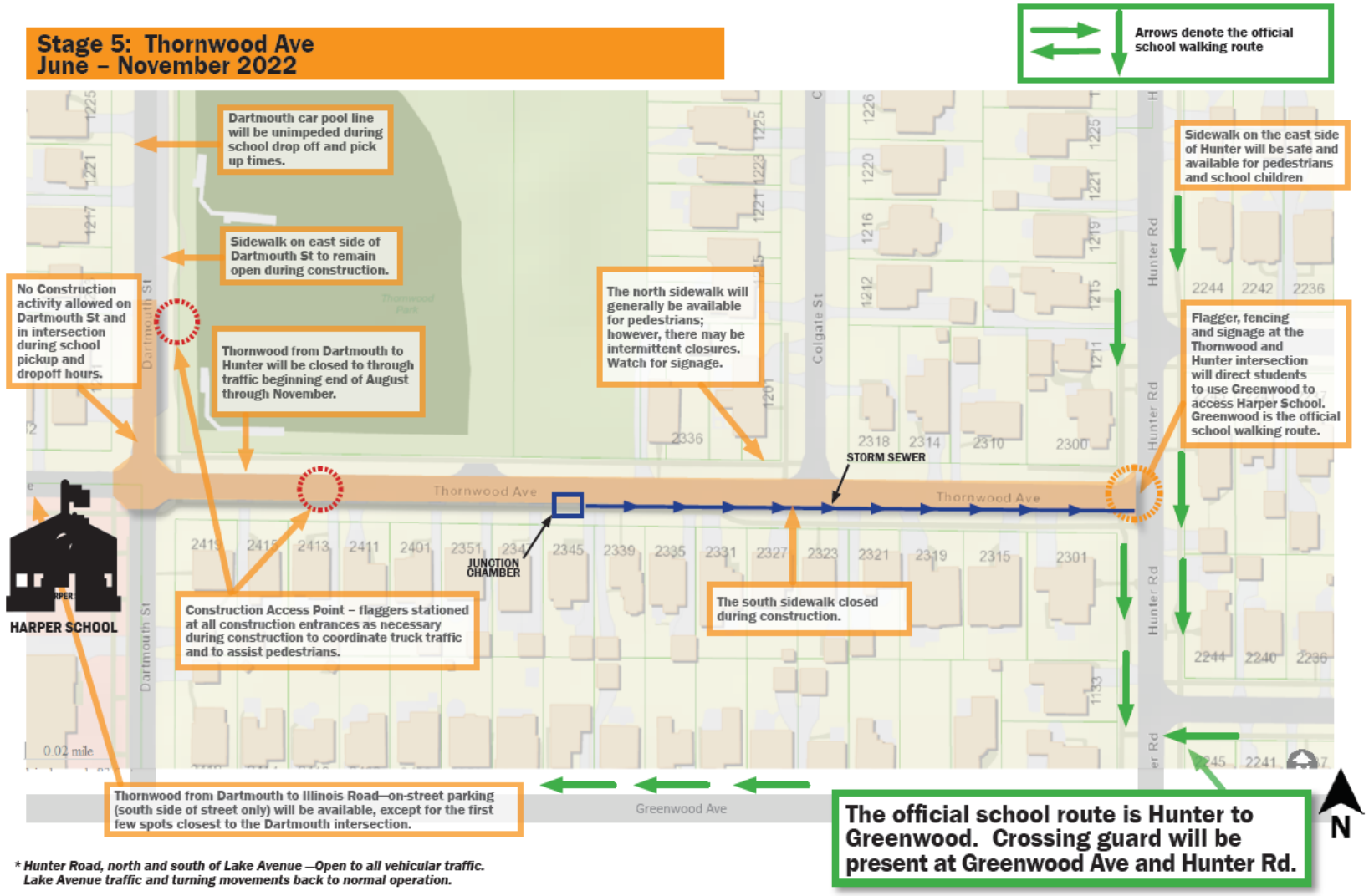
Safety was primary driving factor since Thornwood Park was adjacent to a school and this project reconstructed adjacent roadways – the School Walking Route Map was used as the base map to develop the five (5) stages of construction

- Summer construction:
  - Thornwood Park
  - Hunter Road – main school walking route
  - Critical intersection – Hunter and Lake
- Heavy hauling routes
- Contractor capacity issues
- Detailed MOT and walking routes for each stage
- Start of each stage depended on successful completion of previous stage
- A well choreographed ballet



EXAMPLE STAGING PLAN

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN



** Hunter Road, north and south of Lake Avenue –Open to all vehicular traffic. Lake Avenue traffic and turning movements back to normal operation.*

- How kids walk/ride bikes to school
- Construction flaggers at entrances to Thornwood Park
- Flaggers and temporary pavement at cross-walks along school walking routes
- Specifics for teacher parking on adjacent streets
- No large trucks on adjacent streets during school pick-up and drop off times

RESIDENT COORDINATION EVOLVED INTO A TRUE PARTNERSHIP

VILLAGE OF WILMETTE
STORMWATER
ACTION PLAN

Future IAFSM Presenters

PHASE 3 – THORNWOOD PARK CONSTRUCTION STARTS APRIL 2022

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

- Berger Excavating - $18.7M
  - StormTrap installation and park restoration
  - Storm sewers – 7,900 linear feet
  - Pump Station
- StormTrap Contract - $2.2M
- Total Phase 3 Cost - $20.9M
- Excavation
  - 1,300,000 ft^3 of soil removed
  - 4,700 truck loads
  - 125 trucks/day (tight footprint)
- StormTrap
  - 15+ trucks/day
  - Total 13.6 acre-ft of stormwater storage
    - 4.4 Million Gallons
    - 6.75 Olympic Size Swimming Pools

PHASE 3 – THORNWOOD PARK CONSTRUCTION COMPLETE NOVEMBER 2022

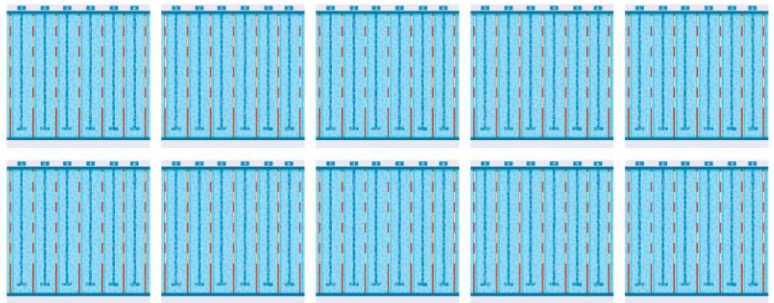
VILLAGE OF WILMETTE STORMWATER ACTION PLAN

THIS WAS THE LARGEST CAPITAL PROJECT IN WILMETTE'S HISTORY THAT INCLUDED:

PHASE 1 – COMMUNITY PLAYFIELDS

- Second Largest in Illinois by volume
- 2307 pieces - most pieces in Illinois
- 20.2 acre-ft of stormwater storage
  6.5 Million Gallons

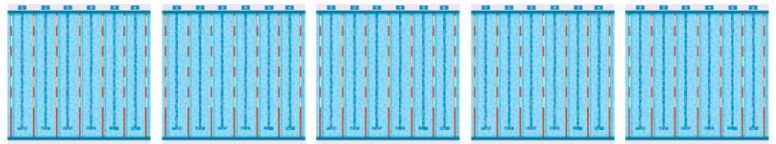
10 Olympic Size swimming pools



HIBBARD PARK

- First 15-foot-tall vault in Illinois
- 10 acre-ft of stormwater storage
  3.2 million gallons

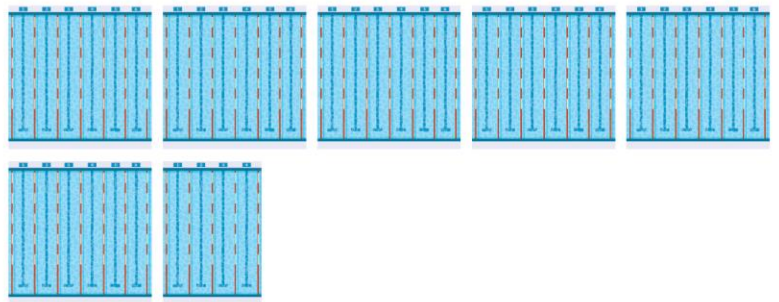
5 Olympic size swimming pools



THORNWOOD PARK

- 13.6 acre-ft of stormwater storage
  4.4 Million gallons

6.75 Olympic size swimming pools



THE VILLAGE OF Wilmette EST. 1872

5 MILES OF STORM SEWER INSTALLED

OVER 50 PUBLIC MEETINGS

THE TOTAL PROJECT COST WAS $64M